



30V 175°C N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _C = +25°C
30V	$2.45 \text{m}\Omega @V_{GS} = 10V$	150 A
	$3.5 \text{m}\Omega @V_{GS} = 4.5 \text{V}$	120 A

Description

This new generation MOSFET is designed to minimize the on-state resistance ($R_{DS(ON)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Power Management Functions
- DC-DC Converters
- Backlighting

Features

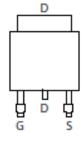
- Low On-Resistance
- Low Input Capacitance
- Lead-Free Finish; RoHS Compliant (Notes 1& 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- An Automotive-Compliant Part is Available Under Separate Datasheet (DMTH3002LK3Q)

Mechanical Data

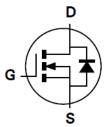
- Case:TO252 (DPAK)
- Case Material: Molded Plastic, "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish Matte Tin Annealed over Copper Leadframe.
 Solderable per MIL-STD-202, Method 208 63
- Weight: 0.315 grams (Approximate)







Pin Out Top View



Equivalent Circuit

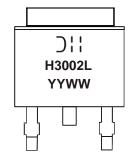
Ordering Information(Note 4)

Part Number	Case	Packaging
DMTH3002LK3-13	TO252 (DPAK)	2500/Tape & Reel

Notes:

- 1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
- See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



Dil = Manufacturer's Marking
H3002L = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 16 = 2016)
WW = Week Code (01 to 53)



Maximum Ratings ($@T_A = +25^{\circ}C$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit		
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	±16	V
Continuous Drain Current, V _{GS} = 10V (Note 7)	l _D	150 100	А		
Pulsed Drain Current (380µs Pulse, Duty Cycle=1%)	I _{DM}	180	А		
Maximum Continuous Body Diode Forward Current (Note 7)			Is	150	Α
Avalanche Current (Note 8), L=1mH			I _{AS}	25	Α
Avalanche Energy (Note 8), L=1mH			E _{AS}	312	mJ

Thermal Characteristics(@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	
Total Power Dissipation (Note 5)		P _D	1.9	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{ heta JA}$	78	°C/W
Total Power Dissipation (Note 6)		P_{D}	3.1	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{ heta JA}$	49	°C/W
Thermal Resistance, Junction to Case (Note 7)	Steady State	$R_{\theta JC}$	1.4	°C/W
Operating and Storage Temperature Range		$T_{J_i} T_{STG}$	-55 to +175	°C

Electrical Characteristics(@T_A = +25°C, unless otherwise specified.)

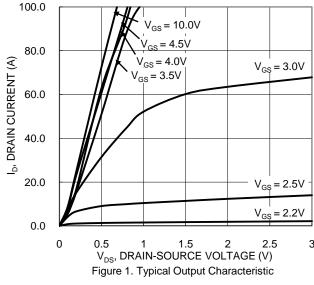
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 9)							
Drain-Source Breakdown Voltage	BV _{DSS}	30	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	ı	-	1	μΑ	$V_{DS} = 24V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	-	-	±100	nA	$V_{GS} = \pm 16V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 9)							
Gate Threshold Voltage	V _{GS(TH)}	1	1.5	2	V	$V_{DS} = V_{GS}$, $I_D = 1mA$	
Static Drain-Source On-Resistance	Pagana	-	1.95	2.45	mΩ	$V_{GS} = 10V, I_D = 25A$	
Static Drain-Source On-Nesistance	R _{DS(ON)}	ı	2.65	3.5	11122	$V_{GS} = 4.5V, I_D = 25A$	
Diode Forward Voltage	V_{SD}	-	0.65	1.1	V	$V_{GS} = 0V, I_{S} = 1A$	
DYNAMIC CHARACTERISTICS (Note 10)							
Input Capacitance	C _{iss}	ı	4336	-	pF	\\ 45\\\\\ 0\\	
Output Capacitance	Coss	ı	3136	-	рF	$V_{DS} = 15V, V_{GS} = 0V,$ - f = 1MHz	
Reverse Transfer Capacitance	C _{rss}	ı	188	-	рF	1 - 1101112	
Gate Resistance	Rg	ı	0.75	-	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge (V _{GS} = 4.5V)	Qg	ı	30	-	nC		
Total Gate Charge (V _{GS} = 10V)	Q_g	ı	69	-	nC	\/ 15\/ I- 25A	
Gate-Source Charge	Qgs	ı	8	-	nC	$V_{DS} = 15V, I_{D} = 25A$	
Gate-Drain Charge	Q_{gd}	ı	9.8	-	nC		
Turn-On Delay Time	t _{D(ON)}	ı	18	-	ns		
Turn-On Rise Time	t _R	-	33	-	ns	$V_{DD} = 15V, V_{GS} = 4.5V,$	
Turn-Off Delay Time	t _{D(OFF)}	-	35	-	ns	$I_D = 25A, R_g = 4.7\Omega$	
Turn-Off Fall Time	t _F	-	30	-	ns]	
Reverse Recovery Time	t _{RR}	ı	48	-	ns	L = 15A di/dt = 100A/us	
Reverse Recovery Charge	Q _{RR}	-	55	-	nC	$I_{\rm S} = 15$ A, di/dt = 100A/ μ s	

Notes:

- 5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
- 6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
- 7. Thermal resistance from junction to soldering point (on the exposed drain pad).
- 8. I_{AS} and E_{AS} rating are based on low frequency and duty cycles to keep T_J = +25°C.
 9. Short duration pulse test used to minimize self-heating effect.
 10. Guaranteed by design. Not subject to product testing.



DMTH3002LK3



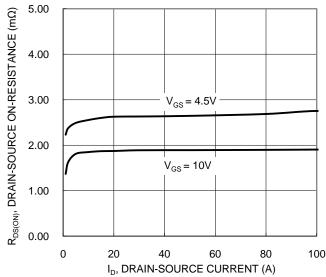
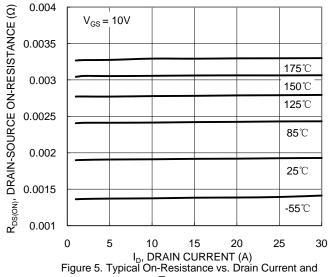
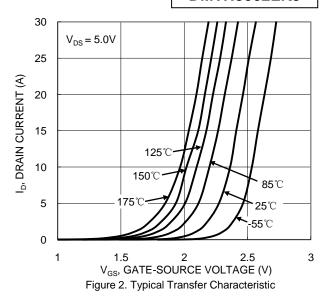
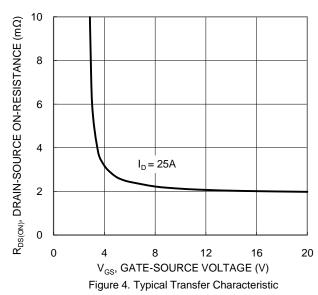


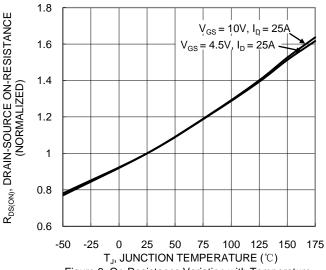
Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage



Temperature









DMTH3002LK3

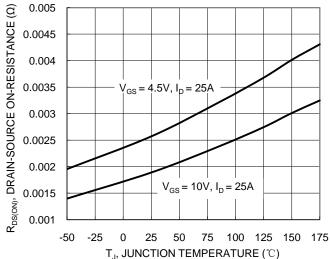


Figure 7. On-Resistance Variation with Temperature

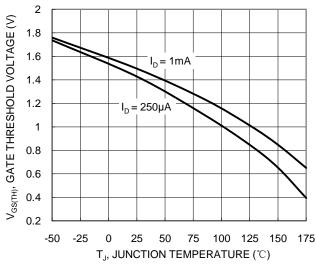


Figure 8. Gate Threshold Variation vs. Junction Temperature

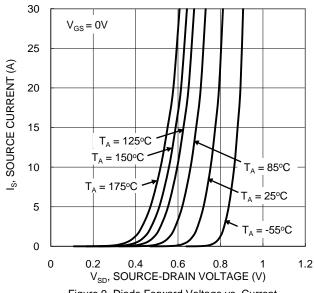
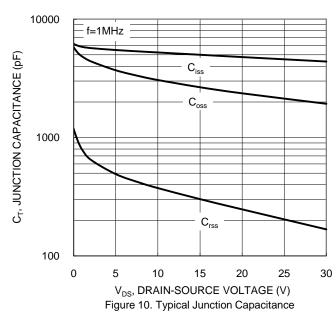
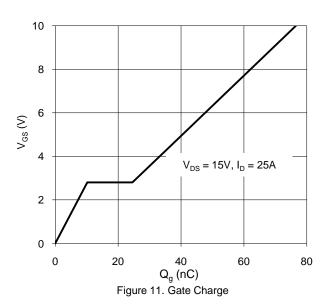
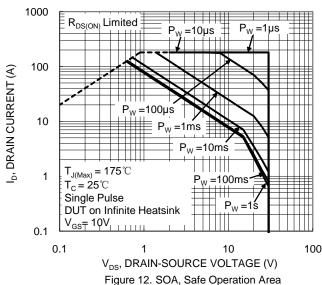


Figure 9. Diode Forward Voltage vs. Current









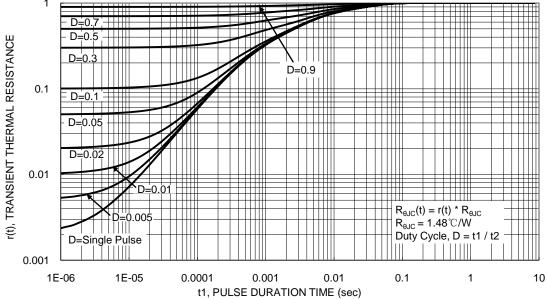


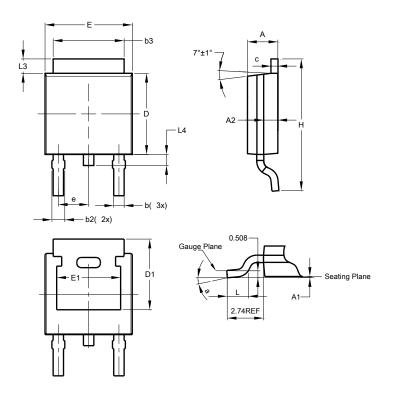
Figure 13. Transient Thermal Resistance



Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

TO252 (DPAK)

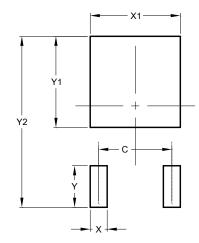


TO252 (DPAK)					
Dim	Min	Max	Тур		
Α	2.19	2.39	2.29		
A 1	0.00	0.13	0.08		
A2	0.97	1.17	1.07		
b	0.64	0.88	0.783		
b2	0.76	1.14	0.95		
b3	5.21	5.46	5.33		
С	0.45	0.58	0.531		
D	6.00	6.20	6.10		
D1	5.21	-	-		
е	-	-	2.286		
Е	6.45	6.70	6.58		
E1	4.32	-	-		
H	9.40	10.41	9.91		
L	1.40	1.78	1.59		
L3	0.88	1.27	1.08		
L4	0.64	1.02	0.83		
а	0°	10°	-		
All Dimensions in mm					

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

TO252 (DPAK)



Dimensions	Value (in mm)			
С	4.572			
Х	1.060			
X1	5.632			
Y	2.600			
Y1	5.700			
Y2	10.700			



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